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EXAMINER	
DANIELS, ANTHONY J	
ART UNIT	**PAPER NUMBER**
2622	

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,366	UYA, SHINJI	
	Examiner	Art Unit	
	Anthony J. Daniels	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment, filed 6/8/2006, has been entered and made of record. Claims 1-12,15 and 16 are pending in the application.

Response to Arguments

2. Applicant's arguments filed 6/8/2006 have been fully considered but they are not persuasive.

As to applicant's arguments regarding claims 1 and 6 and the new matter rejection, the examiner respectfully disagrees.

As to claims 1 and 6, applicant asserts, "...as admitted by the office action, the subject matter is described in the specification as filed..." More specifically, since the claimed subject matter is in the description of related art section, the inventor clearly had possession of the claimed subject matter. Although the inventor had possession of the added material by itself (i.e. "non-readout rows of unequal interval"), it is not certain that the inventor had possession of this material in the context of claim 1. Meaning, when the "non-readout rows of unequal interval" is added to claim 1, the specification does not support the claim. Before the examiner delves into the reason for this, it is submitted that according to the present specification, providing non-readout rows of unequal interval in the column direction produces false colors easily (see Description of Related Art, p. 5, Lines 1-8). This application intends to lower the influence of false color (see p. 6, Lines 4 and 5). It seems as if an amendment of this sort would be thwarting the goal of the invention. Furthermore, in the Description of the Preferred Embodiments, it is

explicitly stated that the non-readout rows and the readout rows are of equal interval; thus reducing false color (see p. 12, Lines 20-22). Regarding claims 1 and 6 and the "non-readout rows of unequal interval", let us consider the embodiment of Figure 1, in this instance, m = 4 and n = 2; therefore, there are 8 rows in the set as seen in Figure 1. There are two units (1st unit – rows L1 and L2, 2nd unit – rows L5 and L6) in the set. It is clearly shown that only two equally spaced (2 rows) intervals of non-readout rows exist in the set in Figure 1. Applicant further asserts, "...with respect to claims 1 and 6, at least the following descriptions apply. Page 17, Line 14 to page 18, Line 23 describes reading of rows L1 and L6, and rows L2 and L5 after transfer. Fig. 1 shows the successive reading of charges. Rows L6 and L1 are four rows above the rows L2 and L5. The concept of reading and transferring rows of charges in the claimed invention is summarized at p. 20, Lines 1-12, which state, "Although each readout operation is asymmetric, the readout pattern as a whole becomes symmetric." Page 25, Lines 21-23 describes a similar concept. Page 11, Line 12 to page 12, Line 4 describes the transfer of first read charges by four rows. Fig. 1 shows transfer of four rows. Thus, the Applicant submits that the technical concept of "non-readout rows of unequal interval is supported by the description at least in these passages." The examiner fails to see how these lend support to the claimed subject matter. When L1 and L6 are readout, there exist 4 rows between the two. When L2 and L5 are readout, there exist 2 rows between these two. This one way the examiner could see an unequal interval in the first and second readout operations. However, if the axis of symmetry is drawn about these rows (4 rows in the first readout and 2 rows in the second readout), as defined in the claim, the first and second groups have a symmetric distribution which contradicts specific claim language. In

conclusion, the "non-readout rows of unequal interval" is a feature of the prior art. It cannot be incorporated in the present invention, because as stated above, it is not what is intended.

In regard to claim 15 and the "second unit being a position apart from the first unit by four...rows", applicant asserts, "...with respect to claim 15, at least Fig. 1 of the subject application clearly shows the first unit being spaced apart from the second unit by four photoelectric converter element rows..." The examiner respectfully disagrees with this statement. Figure 1 clearly shows the first unit (rows L1 and L2) and the second unit (rows L5 and L6) being separated by TWO rows.

3. Applicant's arguments with respect to claim 11 have been considered but are moot in view of the new ground(s) of rejection. *The examiner is not giving a new reference to reject claim 11. A new interpretation of the Udagawa et al. reference is given to the claim necessitated by the amendment to it.*

4. Applicant's arguments regarding the AAPA rejections have been fully considered and are persuasive. Specifically, the combination of the Kobayashi et al. with the AAPA is not valid. Consequently, those rejections have been withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-10 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The "non-readout rows of unequal interval" language of claims 1 and 6 does not appear anywhere in the specification except in the section labeled Description of Related Art. Furthermore, the only Figure that shows non-readout rows of unequal interval is Figure 8 which is a prior art figure. This language with the rest of claims 1 and 6 does not convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 2,3,7 and 8 are rejected as being dependent upon the rejected claim 1.

The "second unit being a position apart from the first unit by four...rows" language does not appear anywhere in the specification in the context of what could be considered claim 15. Furthermore, the only Figure that shows a separation by four rows is Figure 8 which is a prior art figure. This language with the rest of claim 15 does not convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 4-5 and 9-10 are rejected as being dependent upon the rejected base claims 1 and 6, respectively.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Udagawa et al. (US # 5,880,781).

As to claim **11**, Udagawa et al. teaches a solid-state image pickup device (see Figure 1, Figure 2A; Col. 4, Lines 30-34; *{The color layout of Figure 1 is used on the CCD of Figure 2A.}*), comprising: a semiconductor substrate (*The semiconductor substrate is an inherent part of a CCD.*) having a two-dimensional plane on a surface thereof (see Figure 1, Figure 2A; Col. 4, Lines 30-34; *{The color layout of Figure 1 is used on the CCD of Figure 2A.}*); a plurality of photoelectric converter elements arranged in the two-dimensional plane in a matrix configuration having rows and columns (see Figure 1; Col. 4, Lines 35,36); an array of color filters including a plurality of units (Figure 1, Figure 2A, rows starting C1 and M1 (one unit); rows starting C3 and G3 (another unit)), each unit consisting of two adjacent photoelectric converter element rows (see Figure 1; rows starting C Y C and M G M are adjacent, the same for rows starting C3 and G3), said units being repeatedly and contiguously arranged in said array in a column direction (see Figure 1, Figure 2A, Col. 3, Lines 14-17, the units are contiguous as can be seen in Figure 1 and Figure 2A) in which one color filter of the array is formed over each of said photoelectric converter elements (Figure 1), wherein, the first row of each unit has a first color layout of color filters arranged in a row direction (see Figure 1; in the row starting C Y C, there exists a layout being C Y C ; the 1st, 2nd and 3rd elements; *{Continuing in the column direction, there exists the*

first row of each unit having C Y C layout. Some have this layout at the 1st, 2nd and 3rd elements and some have this layout at the 2nd, 3rd and 4th elements (i.e. row 3).}) and the second row of each unit has a row of a second color layout of color filters arranged in the row direction (see Figure 10, in the row starting M G M, there exists a layout being M G M ; the 1st, 2nd and 3rd elements; *{Continuing in the column direction, there exists the second row of each unit having G M G layout. Some have this layout at the 1st, 2nd and 3rd elements and some have this layout at the 2nd, 3rd and 4th elements (i.e. row 4).}*), said second color layout being different from said first color layout (see Figure 1; *{C Y C is different from M G M.}*); one vertical charge transfer channel region formed in said semiconductor substrate for each of the columns of said photoelectric converter elements, adjacent to said each column (see Figure 2B; Col. 4, Lines 36,37, "...VCCD."); a plurality of vertical charge transfer electrodes in which two vertical charge transfer electrodes are disposed over said vertical charge transfer channel regions for each of the rows of said photoelectric converter elements (see Figure 2A, V1, V2; *{The gates V1 and V2 are used for the single row of pixels starting with C1; pulses are applied to the row starting C1, so it is inherent that there is some sort of electrical connection disposed over the charge transfer region.}.}*); and a drive circuit capable of applying readout pulse voltages (see Figure 3, CCD Driver "3"; Col. 4, Lines 64-67) to said vertical charge transfer electrodes corresponding to said photoelectric converter element row having said first color layout in a first unit (see Figure 2A; *{V1-V4 are applied to rows starting C1 and M1.}*) and to said vertical charge transfer electrodes corresponding to said photoelectric converter element row having said second color layout in a second unit (see Figure 2A; *{V1-V4 are applied to rows starting C3 and G3.}*), said second unit being at a position apart from said first unit by two units in the column direction (see

Figure 2A; *{The two units starting M1,Y2 and G2,C3 separate a part of the first unit (C1) and a part of the second unit (G3). The examiner interprets the row starting Y2 and C3 to be the first rows of the units and interprets the rows starting M1 and G2 to be the second rows of the units.}*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa et al. (US # 5,880,781) in view of Tanaka et al. (US # 6,559,889).

As to claim **12**, Udagawa et al. teaches the solid-state image pickup device according to claim 11. The claim differs from Udagawa et al. in that it further requires a variable barrier formed in said semiconductor substrate below said photoelectric converter elements, said variable barrier being capable of modulating an amount of electric charge accumulable in each of said photoelectric converter elements.

In the same field of endeavor, Tanaka et al. teaches that the amount of signal charge accumulated in each sensor of a CCD array is determined by a potential barrier height (*Changing the barrier height changes or modulates the amount of charge received in the photosensors.*) of an overflow barrier that is formed in a p-type well region (see Figure 5, p-type well region "31"; see Col. 4, Lines 52-61) formed below the sensor section (see Figure 5, *{The only thing below*

the p-type region "31" is the n-type substrate; thus, the p-type well region has to be formed below the photosensors.}). In light of the teaching of Tanaka et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the semiconductor substrate of Udagawa et al. to include a p-type well region that determines the amount of charge accumulable in each photosensor, because one of ordinary skill in the art would recognize that this would allow the saturation signal charge amount to increase or decrease in anticipation of reduction, thereby preventing such characteristics as S/N ratio and dynamic from being deteriorated due to the reduction of saturation signal charge amount (see Tanaka et al., Col. 7, Lines 51-62).

Allowable Subject Matter

8. Claims 15 and 16 are allowed contingent upon overcoming the 112 rejection above.

The following is an examiner's statement of reasons for allowance: As to claim **15**, the prior art does not teach or fairly suggest a method of controlling a solid-state image sensor comprising the steps of a) applying readout pulse voltages to vertical charge transfer electrodes belonging to a photoelectric converter element row having a first color layout of a first unit, said first unit being selected once from different sets and to said vertical charge transfer electrodes belonging to a photoelectric converter element row having a second color layout different from said first color layout of a second unit, c) applying readout pulse voltages to said vertical charge transfer electrodes belonging to said photoelectric converter element rows of said first and second units, which are not used to read the electric charge therefrom in said step a) in combination with the rest of claim 15 without the new matter.

9. The allowability of the claims below is contingent on overcoming the 112 rejection of claims 1 and 6 above.

Claims 4,5,9,10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for indicating allowable subject matter can be found in the previous Office Action.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD
8/10/2006

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER